

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1-16 (Cancelled)

17. (Currently Amended) A halogen dioxide generating and re-cycling system, comprising:

- a) a source of an aqueous halogen dioxide feed solution, the source comprising means for delivering halogen dioxide salt directly to an aqueous feed solution inlet stream to locally form the aqueous halogen dioxide feed solution;
- b) a non-membrane electrolysis cell comprising an anode and a cathode, said anode and said cathode being separated by a non-conducting porous flow barrier, and said electrolysis cell having a cell chamber with an inlet for receiving said aqueous feed solution comprising halogen dioxide salt and an outlet for discharging effluent comprising halogen dioxide, wherein said anode comprises a plurality of porous flow passages through which at least a portion of the aqueous halogen dioxide feed solution flows in a cross direction to a flow of electricity between the anode and the cathode, and wherein said porous flow barrier is structured and arranged to restrict flow of the aqueous feed solution through the cell chamber in a cross direction to the flow of electricity between the anode and cathode, thereby increasing a proportion of aqueous halogen dioxide feed solution that flows through the anode;
- c) a passage formed through at least a portion of said porous anode and at least a portion of said non-conducting porous flow barrier;
- d) an electric current supply configured to provide an electric current that flows between the anode and the cathode in a cross direction to the flow of the aqueous feed solution through the porous anode and the cell chamber wherein the current converts a portion of the halogen dioxide salt in the passage to halogen dioxide, and thereby forms an aqueous effluent comprising halogen dioxide; and

e) at least one return passage configured for returning one or more of i) depleted effluent comprising reverted halogen dioxide salt and ii) at least a portion of the aqueous effluent from the cell chamber back to said aqueous feed solution inlet stream: wherein the means for locally delivering halogen dioxide salt to an aqueous feed solution comprises a halogen dioxide salt chamber comprising a slow dissolving tablet of halogen dioxide salt comprising a mixture of said halogen dioxide salt and a dissolution control agent selected from fatty alcohol, fatty acids and waxes that provides controlled release of said halogen dioxide salt to form an effective amount of halogen dioxide product, wherein at least a portion of the aqueous feed solution stream passes through said salt chamber wherein between 1 milligram to 10 grams of the halogen dioxide salt dissolves into each liter of the aqueous feed solution stream.

Claims 18-20. (Cancelled)